

# **SECTION D**

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## SECTION D

### SPECIFIC REGIONAL ANALYSIS REQUIREMENTS

#### CHAPTER 8

#### PM-10 NONATTAINMENT AND MAINTENANCE AREAS

##### CONFORMITY DETERMINATION REQUIREMENTS FOR PM-10 NONATTAINMENT AREAS

The requirements for regional analysis in PM-10 nonattainment and maintenance areas are listed below:

- There are no network-based travel modeling requirements. However, areas already using network-based models must continue to do so, and must follow the six network-based modeling requirements included in 40 CFR §93.122(b)(1)(i)-(vi), as amended by 62 FR 43814, Aug. 15, 1997 and discussed in [Chapter 6](#), and
- All areas not using network-based models are required to use best professional practice to account for VMT estimates, such as HPMS, with the methodology to be determined through the interagency consultation process pursuant to 40 CFR §93.122(c), as amended by 62 FR 43815, Aug. 15, 1997.

##### CRITERIA AND PROCEDURES FOR DETERMINING CONFORMITY FOR ACTIONS UNDER REVIEW

Below is a summary of the conformity criteria applicable to transportation plans, TIPs and projects as shown in Table 1 of the transportation conformity rule:

*40 CFR §93.109 (b), as amended by 62 FR 43807, August 15, 1997.*

###### *TABLE 1. CONFORMITY CRITERIA*

###### ALL ACTIONS AT ALL TIMES

<i>§93.110</i>	<i>Latest planning assumptions</i>
<i>§93.111</i>	<i>Latest emissions model</i>
<i>§93.112</i>	<i>Consultation</i>

###### TRANSPORTATION PLAN

<i>§93.113(b)</i>	<i>TCMs</i>
<i>§93.118 OR §93.119</i>	<i>Emissions budget OR Emissions reduction</i>

###### TIP

<i>§93.113(c)</i>	<i>TCMs</i>
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§93.118 OR §93.119     *Emissions budget OR Emissions reduction*

PROJECT (FROM A CONFORMING PLAN/TIP)

§93.114                     *Currently conforming plan/TIP*  
§93.115                     *Project from a conforming plan/TIP*  
§93.116                     *CO and PM<sub>10</sub> hot spots*  
§93.117                     *PM<sub>10</sub> control measures*

PROJECT (NOT FROM A CONFORMING PLAN/TIP)

§93.113(d)                 *TCMs*  
§93.114                     *Currently conforming plan/TIP*  
§93.116                     *CO and PM<sub>10</sub> hot spots*  
§93.117                     *PM<sub>10</sub> control measures*  
§93.118 OR §93.119     *Emissions budget OR Emissions reduction*

**CRITERIA AND PROCEDURES FOR DETERMINING CONFORMITY FOR PM-10 NONATTAINMENT AND MAINTENANCE AREAS**

In addition to the criteria listed in Table 1 of the transportation conformity rule, the conformity determination for PM-10 nonattainment or maintenance areas is also based on the criteria specific to the nonattainment areas and are summarized in [Exhibit 34](#). In order to demonstrate conformity, PM-10 nonattainment and maintenance areas need to perform “conformity tests” using their regional emissions analysis. Detailed discussion of these requirements is provided in the transportation conformity rule and in [Chapter 5](#).

**PM-10 CONTROL MEASURES**

EPA generally interprets the 1990 CAA to require the implementation of increasingly stringent control measures in areas with more serious pollution control problems. Moderate PM-10 nonattainment areas are required to identify and select a mix of reasonably available control measures (RACM) needed to assure attainment of the NAAQS. Serious nonattainment areas are required to select a mix of the best available control measures (BACM), thus providing more stringent reductions than RACM.

**Exhibit 34**  
**Requirements for PM-10 Nonattainment & Maintenance Areas**  
**(40 CFR §93.109 [e], as amended by 62 FR 43808, Aug. 15, 1997)**

Nonattainment/ Maintenance Area	Requirements	Sec. (§)	Applicable Time Period
	<i>Latest planning assumptions</i> <i>Latest emissions model</i> <i>Consultation</i> <i>TCMs (for transportation plan/ TIP) and projects not from a plan/TIP</i>	93.110 93.111 93.112 93.113 (b) -(c)	All times
PM-10 nonattainment and maintenance areas  (Plans/TIPs)	<i>Emissions budget test</i>	93.118	After EPA finds the motor vehicle emissions budget in the submitted revised control strategy SIP or maintenance plan adequate for transportation conformity purposes (§93.109(e)(2)(ii))
	<i>Emissions reduction tests (build/no-build test OR no-greater-than 1990 test)</i>	93.119	If EPA finds the motor vehicle emissions budget(s) in the submitted control strategy implementation plan or maintenance plan inadequate for transportation conformity purposes and no adequate motor vehicle emissions budget(s) exists in an approved SIP or previously submitted control strategy or maintenance plan (§93.109(e)(3)(ii)); <i>OR</i> The submitted implementation plan revision is a demonstration of impracticality as provided under CAA §189(a)(1)(B)(ii) and does not demonstrate attainment (§93.109(e)(3)(iii)).

EPA has published guidance on the selection and analysis of PM-10 control measures for serious nonattainment areas. It defines BACM as:

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*...the maximum degree of emissions reduction of PM<sub>10</sub> and PM<sub>10</sub> precursors from a source... which is determined on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, to be achievable for such source through the application of production processes and available methods, systems, and techniques for control of each pollutant. For PM<sub>10</sub>, BACM must be applied to existing source categories in nonattainment areas that cannot attain within the moderate area time frame.*

In general, EPA prefers measures that prevent PM-10 emissions over the long term versus temporary controls. The former is considered inherently more effective as it eliminates emissions and requires fewer administrative and enforcement resources. EPA believes that BACM requires “a greater

emphasis on the merits of the technology alone and less flexibility in considering other factors.”

EPA requires BACM SIP revisions to evaluate the technical and economic feasibility of all relevant control measures that reduce the emissions of source categories that are determined to be either above the de minimis level or expected to produce future exceedances.

EPA guidance on technical feasibility for area source control measures is quite limited; however, an assessment of the impact of a selected control measure on one or more of the characteristics that affect emissions from a source is required. These characteristics generally include the following:

- The size or extent of the source (e.g. vehicle-miles traveled on an unpaved surface);
- Physical characteristics (e.g. moisture content of materials handled); and
- Operating practices (e.g. maximum vehicle speeds on unpaved roads).

Guidance on economic feasibility indicates that the capital costs, annualized costs and cost effectiveness of all technologically feasible control measures should be considered. The assessment, however, should not be concerned with the ability of a particular source to “afford” to implement a control measure. Instead, EPA requires “evidence that the control technology has previously been implemented at other sources in a similar source category without unreasonable economic impacts.”

EPA PM-10 planning guidance defines critical source parameters as source characteristics that affect emissions. Such characteristics include the size or extent of the sources, their physical characteristics, and their operating procedures. A discussion of critical parameters that are essential to the success of any measure aimed at reducing transportation-related PM-10 source emissions is presented below.

Paved Road Travel: EPA’s emissions factor guidance document, AP-42, lists the emissions factor variables for dust emissions from paved road travel as total dust loading on the road surface and silt content of the dust. The factor governing source size is vehicle-miles traveled on paved roads.

Unpaved Road Travel: AP-42 lists the emissions factor variables for dust emissions from unpaved road travel as silt content of road surface material, vehicle speed, vehicle weight, number of wheels per vehicle, and number of precipitation days per year. The factor governing source size is vehicle-miles traveled on unpaved roads. From an enforcement perspective, it would be very difficult to regulate the weight and number of wheels of vehicles traveling over unpaved roads. As a result, the factors listed above with the exceptions of vehicle weight, number of wheels, and precipitation frequency are deemed to be critical source parameters for unpaved road travel.

Industrial Paved Road Travel: AP-42 lists the emissions factor variables for dust emissions from industrial paved road travel as total dust loading on the road surface and silt content of the dust. The factor governing source size is vehicle-miles traveled on industrial roads. As no significant impediments to the regulation of each of these factors have been identified, all of these factors are concluded to be critical source parameters for industrial paved road travel.

Construction Site Preparation: AP-42 lists the emissions factor variables for construction site preparation as surface silt content and surface moisture content. The factor governing source size is vehicle-miles traveled over the construction site. As no significant impediments to the regulation of each of these factors have been identified, all of these factors are concluded to be critical source parameters for construction site preparation.

On-road and Non-road Motor Vehicle Exhaust: AP-42 and other vehicle emissions models list a number of factors that contribute to on-road and non-road motor vehicle PM-10 exhaust emissions rates. For many of these factors, such as operating mode (i.e., cold start), no practical enforcement approach is available to alter baseline values. For factors relating to source extent, such as vehicle-miles traveled, the suggested control measures consist of travel reduction proposals which collectively would provide very limited reduction to source extent. As a result, only programs that modify engine design, engine maintenance practices, or fuel specifications appear to hold potential for significantly reducing baseline emissions. Because the significant fraction of motor vehicle PM-10 emissions are generated by diesel-powered vehicles, only those control measures that impact this fleet are generally analyzed. Thus, the critical parameters for on-road and non-road motor vehicle exhaust are determined to be engine design (including exhaust controls), engine maintenance practices, and fuel specifications for diesel vehicles.

PM-10 Precursors: The formation of secondary ammonium nitrate can be a source causing significant impacts during the winter season at urban center monitoring sites. Neither AP-42 nor any other emissions factor reference surveyed contains any discussion of the precursors or reactions that contribute to ammonium nitrate formation, with the exception of the identification of NO<sub>x</sub> emissions factors for a spectrum of combustion sources.

A summary of the control measure parameters for the transportation-related source categories discussed above is displayed in [Exhibit 35](#). The number of control measures available to influence these parameters is extensive. For this reason the reader is referred to the following documents for additional information on the subject of the control of transportation-related PM-10 emissions:

- *Controlling Particulate Matter Under the Clean Air Act: A Menu of Options*, STAPPA/ALAPCO, July 1996;
- *PM-10 Innovative Strategies: A Sourcebook for PM-10 Control Programs*, U.S. Environmental Protection Agency, December 1993; and
- *Particulate Control Measure Feasibility Study*, Maricopa Association of Governments, January 24, 1997.

**Exhibit 35**  
**Potential Transportation Source Control Measure Parameters**

<b>Transportation Source</b>	<b>Control Measure Parameters</b>
<b>! Paved Road Travel</b>	<b>! Total Dust Loading</b> <b>! Silt Content of Dust Loading</b> <b>! Vehicle Miles Traveled</b>
<b>! Unpaved Road Travel</b>	<b>! Soil Silt Content</b> <b>! Average Vehicle Speed</b> <b>! Average Vehicle Weight</b> <b>! Vehicle Miles Traveled</b>
<b>! Industrial Paved Road Travel</b>	<b>! Total Dust Loading</b> <b>! Silt Content of Dust Loading</b> <b>! Vehicle Miles Traveled</b>
<b>! Construction Site Preparation</b>	<b>! Soil Silt Content</b> <b>! Soil Moisture Content</b> <b>! Vehicle Miles Traveled</b>
<b>! On-road and Non-road Motor Vehicle Exhaust</b>	<b>! Diesel Engine Design</b> <b>! Diesel Engine Maintenance Practices</b> <b>! Diesel Fuel Specifications</b>
<b>! PM-10 Precursors</b>	<b>! Nitrogen Oxides Emission Density</b> <b>! Ammonia Emission Density</b>

**QUESTIONS AND ANSWERS**

**Do serious PM-10 areas need to use network models to model PM-10 emissions?**

In the preamble to the 1993 conformity rule (58 FR 62212, Nov. 24, 1993), EPA specifically discussed whether serious PM-10 nonattainment areas should be required to use transportation network models, as required for serious and above ozone and CO areas. EPA decided the network models in PM-10 areas are not required because EPA believes that the resources involved in such modeling efforts in PM-10 areas may often exceed the benefits. Agencies in PM-10 areas must consult with each other on how to model PM-10 emissions.

**When do PM-10 areas need to model from construction-related dust?**

The procedures for determining regional transportation-related emissions for PM-10 from construction-related fugitive dust ([See Appendix G](#)) are discussed in the transportation conformity

rule as follows:

*40 CFR §93.122(d)(1)-(2), as amended by 62 FR 43815, August 15, 1997*

*(d) PM<sub>10</sub> from construction-related fugitive dust.*

*(1) For areas in which the implementation plan does not identify construction-related fugitive PM<sub>10</sub> as a contributor to the nonattainment problem, the fugitive PM<sub>10</sub> emissions associated with highway and transit project construction are not required to be considered in the regional emissions analysis; and*

*(2) In PM<sub>10</sub> nonattainment and maintenance areas with implementation plans which identify construction-related fugitive PM<sub>10</sub> as a contributor to the nonattainment problem, the regional PM<sub>10</sub> emissions analysis shall consider construction-related fugitive PM<sub>10</sub> and shall account for the level of construction activity, the fugitive PM<sub>10</sub> control measures in the applicable implementation plan, and the dust-producing capacity of the proposed activities.*